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CANADA & GLOBAL WARMING

MEETING THE CHALLENGE

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C A N A D A

Scale

0 1000 2000 km

Province or territory	Land km^2	Freshwater km^2	Total km^2	Percentage of total area
Newfoundland	371,690	34,030	405,720	4.1
Prince Edward Island	5,660	–	5,660	0.1
Nova Scotia	52,840	2,650	55,490	0.6
New Brunswick	72,090	1,350	73,440	0.7
Quebec	1,356,790	183,890	1,540,680	15.5
Ontario	891,190	177,390	1,068,580	10.7
Manitoba	548,360	101,590	649,950	6.5
Saskatchewan	570,700	81,630	652,330	6.5
Alberta	644,390	16,800	661,190	6.6
British Columbia	929,730	18,070	947,800	9.5
Yukon Territory	478,970	4,480	483,450	4.8
Northwest Territories	3,293,020	133,300	3,426,320	34.4
Canada	**9,215,430**	**755,180**	**9,970,610**	**100.0**

SOURCE: Canada Year Book, 1991

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WE MUST STRENGTHEN OUR PARTNERSHIP

It is now internationally recognized that, as a consequence of growing human population and accelerating development, concentrations of greenhouse gases in the atmosphere are increasing. This is enhancing the natural greenhouse effect resulting in additional warming of the earth's surface. It is also becoming increasingly clear that, unless action is taken to address global warming, serious and in some cases irreversible social, economic and ecological damage may well occur in many regions of the world.

Meeting the domestic and international challenge of global warming is an important component of Canada's Green Plan For a Healthy Environment.

Domestically, the federal, provincial and territorial governments, working in partnership, are implementing the National Action Strategy on Global Warming. As an initial step we have committed to stabilizing national emissions of greenhouse gases, not already controlled under the Montreal Protocol, at 1990 levels by the year 2000. We are joined in this national partnership by Canadian industries, municipalities, public interest groups and individual citizens from all walks of life.

A lasting solution to the challenge of global warming will require long term coordinated international action. The United Nations Convention on Climate Change establishes a broadly supported blueprint for global action. It is an important first step in a concerted international response to global warming. It is now up to each country to do its share and demonstrate its willingness to meet the challenge.

Jean J. Charest

Jean J. Charest
Minister of the Environment

CANADA HAS MANY DIMENSIONS

A Huge and Sparsely Populated Nation

In geographic terms, Canada is the second largest country in the world, second only to Russia in total land mass but larger than the United States, China and Brazil. It stretches across the entire North American continent, from Newfoundland in the east to British Columbia in the west. Its northern-most border is the North Pole and its southern-most is on the same parallel of latitude as the state of California. Canada is surrounded on three sides by oceans (the Pacific, Atlantic and Arctic) and its huge interior waters include the five Great Lakes in the south, and Hudson and James bays in the North.

Canada's vast prairies are larger than most of Western Europe and its northern tundra and permafrost region extends across more territory than the Sahara Desert. Its forests rival the Central/South American rain forests in size and in ecological importance. Canada has mountain ranges as massive as the Alps or the Urals – some of the youngest (the Rockies in the west) and some of the oldest (the Gatineaus and Laurentians in the east).

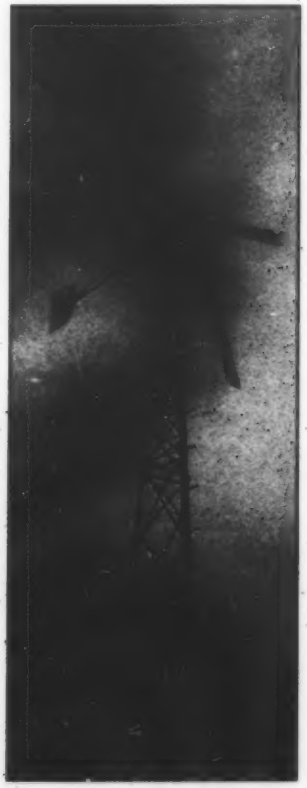
In population terms, Canada is also one of the smaller nations in the world with only around 27 million people. About 90 per cent of Canada's population lives within 160 km of the Canada-United States border, almost half of these in the three largest metropolitan centres – Vancouver, Toronto and Montreal. This combination of a small and heavily concentrated population and a large geographic area means that isolation and distance are two basic elements of Canadian society.

A Northern Land of Climatic Contrasts and Extremes

If there is one thing that all Canadians have in common, it is their obsession with the weather. Invariably, it is the first topic of conversation among friends and strangers alike, possibly because the climatic diversity of the country influences virtually every aspect of Canadian life. In many ways, it is our climate that makes us uniquely Canadian. In fact, few nations can match the climatic diversity of Canada, which is not surprising given the size of Canada's land mass and the effects of its three ocean boundaries. This diversity is best reflected in the cli-

mate of British Columbia where a semi-arid desert lies within 300 km of the only significant tract of rain forest in North America.

In general terms, Canada is a northern nation with a northern climate. It has relatively short, intensive summers, short growing seasons, and long winters with low winter temperatures averaging minus 10° C in the south to minus 50° C in the north. Seasonal variations are much more moderate on the east and west coasts of the country; they do not experience the same extremes in temperature as the other parts of the country.



However, to offset this more moderate climate, both coasts are subject to many more rainy days in an average year. In fact, average precipitation on the west coast can be as high as 3,200 mm per year and 1,500 mm on the east coast. This compares to 200-300 mm annually in the southern interior of British Columbia, 350-500 mm annually on the Prairies, while Canada's northland averages 100-200 mm, making it the driest of the regions. In more dramatic terms, annual average precipitation ranges from 6,655 mm in Henderson Lake, B.C. to 64 mm in Eureka, Northwest Territories.

Even sunshine is a variable across Canada with the Prairie provinces recording the highest annual average in sun hours and the Atlantic provinces the least. For example, the capital city of Newfoundland, St. John's, records 1,500 hours of bright sunshine compared to almost 2,400 in Regina, the capital of Saskatchewan. In fact, Regina records almost as much sunshine as Rome, Italy and only slightly less than Athens, Greece.

It is this northern climate of contrasts and extremes that has defined how Canadians live, how they work and how they play. It is not a coincidence that the snowmobile was invented in Canada, nor that Canadians rank among the world's best hockey players and curlers.

A Well-Developed, Export-Based Economy

At the same time, Canadians are a very industrious and energetic people. The need to overcome distance has made them leaders in transportation and communication technologies. Canada's richly endowed natural resource base – forests, oil and natural gas, minerals and fish among them – has resulted in one of the more developed economies in the world and, next to Japan, probably the most highly dependent upon exports as its source of economic strength. Canada's exports range from raw materials (ores, gas and grains) to fully manufactured products (automobiles and petrochemical products).

Diversity in Canada's Cultural and Political Institutions

A number of other factors are also responsible for the many dimensions of Canada. Distance, as well as history, has contributed to the diversity of Canada's cultural, social and political institutions.

Canada has two official languages (English and French). Canada has a multicultural society of people who have emigrated to this country from virtually every corner of the globe. Canada also has the rich and vibrant traditions of its aboriginal peoples – Indians, Inuit and Metis – which continue to contribute to our national life.

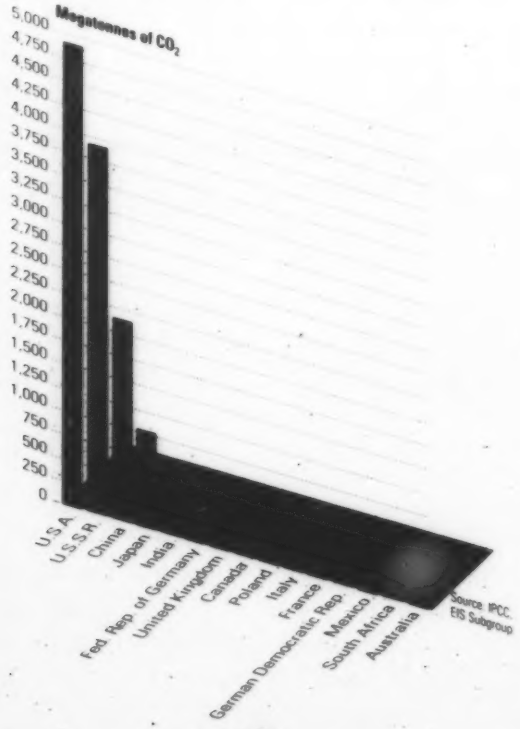
Because of the geographic, cultural and economic diversity of the regions, different traditions and values across the country have a significant impact on political and legal institutions. For example, Quebec's jurisprudence is based upon the Napoleonic Code while other provinces derive their legal frameworks from British Common Law. In the Northwest Territories, Inuit and Indian traditions have more influence in shaping their approach to decision making.

Canada is a federation consisting of 10 provinces and two territories, along with the federal government. It covers five major geographic regions – the west coast (British Columbia), the Prairies (Alberta, Saskatchewan and Manitoba), central Canada (Ontario and Quebec), Atlantic Canada (Nova Scotia, New Brunswick,

Prince Edward Island and Newfoundland) and the North (Yukon and the Northwest Territory).

Under Canada's constitution, provincial and territorial governments share political authority and jurisdiction with the national government, unlike unitary states such as Great Britain or France. The shared nature of most decision making has resulted in the various levels of government devising a broad range of processes and mechanisms to harmonize activities and cooperate in the achievement of common goals. Nowhere is this more apparent than in dealing with environmental issues where governments have achieved many important successes both in addressing domestic concerns and contributing to international solutions. In fact, it is proposed that the concept of sustainable development be entrenched in Canada's constitution, a constitution that is currently undergoing revisions.

Energy CO_2 Emissions – 1989



CANADA IS A CONTRIBUTOR TO GLOBAL WARMING

Canada accounts for about two per cent of total world emissions of greenhouse gases. This country contributes roughly two per cent of energy-related carbon dioxide (CO_2) emissions, one-two per cent of methane and nitrous oxide emissions and about two per cent of world CFC emissions. CO_2 emissions are by far the largest greenhouse gas source in Canada, primarily from energy consumption.

Geography and Climate Account for High Energy Use

While Canada accounts for only a small proportion of total world emissions, the picture changes when viewed on a per capita basis. On that scale, Canada ranks second among the industrialized countries in terms of energy-related carbon dioxide emissions. While that represents an intensive use of energy, it does not necessarily mean that Canada's energy use is extravagant or wasteful. In fact, the country's geography and climate (along with the energy intensive nature of some of its industrial activities) account for a significant proportion of Canada's per capita energy consumption. Because of the size of Canada, the country has one of the lowest population densities of any nation in the world. Naturally, energy expended on transportation and communications activities alone is extraordinarily high in comparison to other countries. In fact, Canada's use of energy for domestic transportation purposes should be seen relative to the use of energy by other countries for international transportation. Halifax is as far away from Vancouver as New York City is from Paris, France. The distances between urban centres require that Canadians rely upon airline or automobile travel rather than the more energy-efficient train travel that is prevalent throughout Europe – even a 200-km per hour train service would take 24 hours to go from Toronto to Vancouver.

Because Canada has a northern climate with long winters, heating homes, offices and manufacturing facilities through the winter months consumes

proportionally more energy than the more temperate climates experienced by the United States, Japan or the European Community. Further, energy consumption for heating increases dramatically in the northern regions of Canada where winter temperatures are experienced for eight or nine months of the year. In fact, the energy costs for virtually every social and economic activity increase as the temperature drops. This is offset somewhat by the proportionally lower costs of space cooling through

temperate summer conditions.

Canada's Export Economy Attributes More Emissions to Canada

Economic factors contribute to Canada's relatively high per capita energy consumption. A major strength of Canada's economy is its considerable natural resource base – mining, forestry and oil and natural gas development in particular. Canada has the world's largest per capita production of nickel, copper, potash, gypsum, uranium, zinc, barley, industrial

Per Capita Commodity Production

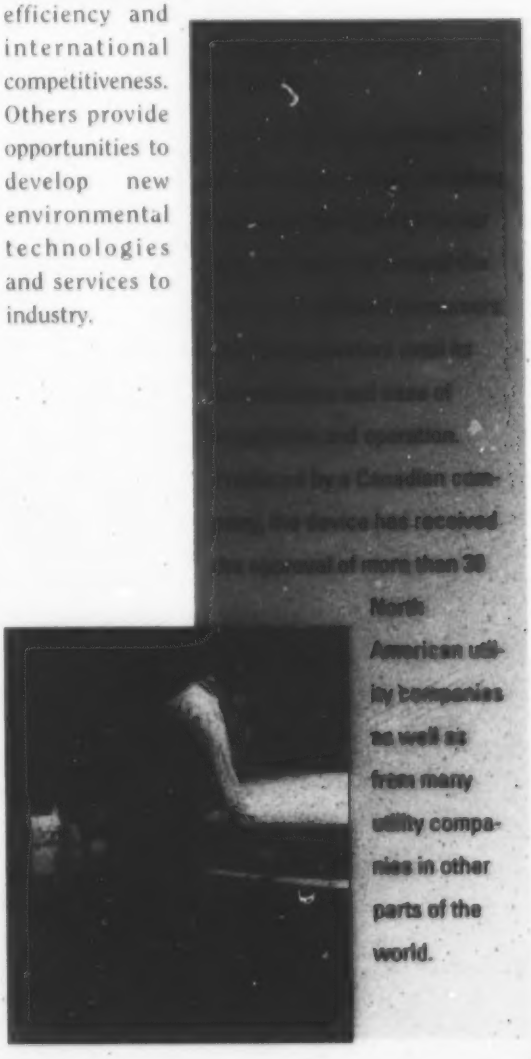
		CANADA	AUSTRALIA	BRAZIL	CHINA	FRANCE	GERMANY	JAPAN	SOUTH KOREA	SWEDEN	UNITED KINGDOM	UNITED STATES	SOVIET UNION
Metric tonnes per capita	• Aluminum	51		4	<1	1	10	9	<1	13	7	21	8
	• Nickel		5	<1	0	0	0	0	0	0	0	<1	<1
	• Copper			<1	<1	0	0	<1	<1	10	0	6	3
	• Potash		0	0	<1	31	35		0	0	7	5	35
	• Gypsum			4	6	93	28	51	0	0	60	60	20
	• Lead	14		<1	<1	<1	0	<1	<1	10	0	2	2
	• Uranium		212	<1	0	60	11	21	6	205	0	20	0
	• Zinc		43	<1	<1	<1	0	1	<1	22	0	1	3
	• Wheat			40	80	53	19	7	< 1	161	207	197	29
	• Barley		212	1	3	180	200	3	12		160	53	153
	• Oats		95	<1	<1	20	43	<1	0		8	22	74
Cubic metres per capita	• Newsprint		24	1	<1	5	11	21	6		8	22	6
	• Roundwood		1020	430	80	524	491	259	53		86	1520	1000
	• Sawnwood		192	117	23	157	157	236	81		31	388	345

Highest 2nd Highest

Source IPAC 1991

roundwood, sawn lumber and newsprint. It has the second highest per capita production of aluminum, lead, wheat and oats. Because of these developments and the distances involved, Canada also has the second highest volume of freight movement per capita. These are all energy intensive activities in relation to the per unit value of the products of those resources.

At the same time, a significant proportion of the products and resources developed in Canada are destined for export, including agricultural production. However, CO_2 emissions associated with these export activities are attributed to Canadian sources rather than to the countries which are consuming those exports. This increases per capita emissions in Canada while reducing them in countries which would otherwise have to engage in higher energy consumption if they were to produce the commodities themselves. While geographic, climatic and economic factors play a major role in Canada's overall emission levels, important opportunities exist to reduce emissions. Many measures under consideration are economically attractive with the potential to help improve Canada's industrial efficiency and international competitiveness. Others provide opportunities to develop new environmental technologies and services to industry.

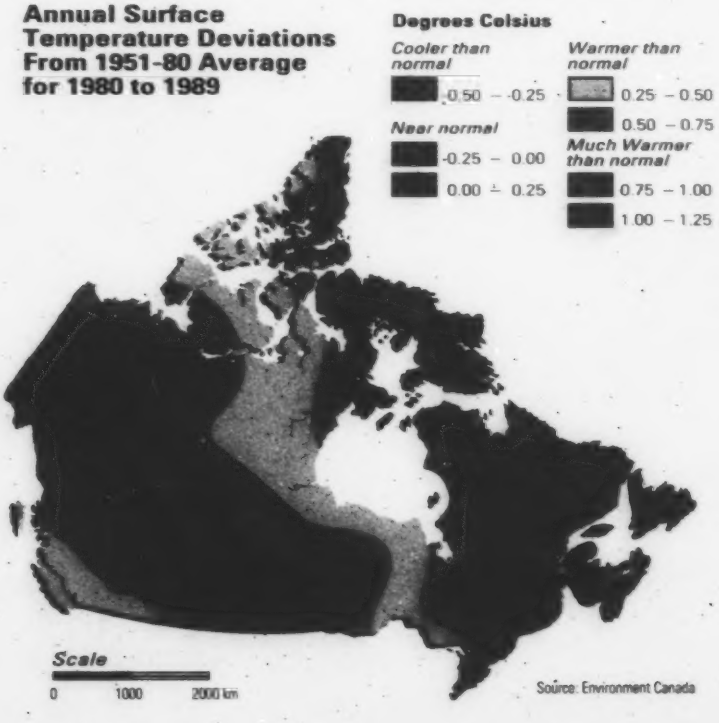


CANADA IS PARTICULARLY SENSITIVE TO THE IMPACTS OF GLOBAL WARMING

Over 1,000 years ago, the southwest coast of Greenland was host to a thriving community of almost 5,000 Vikings who sustained themselves on the abundant cod fish as well as cereal crops which they planted during the summer months. Four hundred years later, the Viking settlement had disappeared. The farmland they had painstakingly developed had been reclaimed by permafrost and the sea lanes on which they travelled and fished were once again choked by ice. The reason – a global decrease in average temperature of about one degree Celsius.

The fate of the first European explorers to North America demonstrates the profound impact that even minor changes in mean global temperatures can produce. As a northern nation with a wide variety of climatic variations from coast to coast, Canada is particularly susceptible to the impacts of global warming.

Annual Surface Temperature Deviations From 1951-80 Average for 1980 to 1989



At first glance, a warmer climate would seem beneficial to Canada's cold, northern climate, producing a longer growing season and reducing the severity of winter conditions. However, scientists now agree that global warming will produce far more profound changes in the climate than a simple rise in temperature, including shifts in global wind and rainfall patterns. Sophisticated computer models suggest that temperatures could increase by as much as 10 degrees Celsius in some areas of the country, with the greatest rise occurring in the northern areas of the country during the winter months. Though the exact nature of global warming is not yet fully understood, any climate change will dramatically change Canada's natural, social and economic systems.

From Water Rich To Water Poor

A significant portion of the world's fresh water supply lies within the great land mass of Canada; most of Canada is water rich. The effects of global warming could change that, making clean, fresh water supplies of greater importance to Canadians. With precipitation patterns moving northward, conditions in southern Canada – where most Canadians live and work – may become significantly drier. Longer warm seasons would also increase the rate of water evaporation in the southern areas, contributing to declines in water supplies.

There is already considerable pressure on available water resources in some parts of southern Canada because of patterns of urbanization, agriculture and industrial development. Lower water tables, the shrinking of water supplies in rivers, lakes and reservoirs and the concentration of pollutants in some of the country's water systems would increase the already heavy demands on our national water resources. It would also affect navigation on the Great Lakes and the generation of hydro-electric power.

The Prairie Grain Harvest Would Be Affected

Because of the productivity of Canada's agricultural industry, Canada is a leading exporter of cereal grains, shipping millions of tonnes annually around the world. Again, however, Canada's primary agricultural areas are concentrated in the southern latitudes which would be most affected by drier conditions and more frequent droughts. In this regard, the southern prairie provinces (Alberta, Saskatchewan and Manitoba) are particularly vulnerable to potential soil degradation and erosion because of lower rainfalls and reduced soil moisture content. Canada could also anticipate more problems with pests and crop diseases as climate conditions encourage them to move northward.

Warmer temperatures could produce more favourable growing conditions in the northern areas of the country. However, any potential northward expansion of the agricultural zone would be severely restricted since much of this land contains soil that is only marginally suitable for agricultural purposes. The areas that are most suitable contain valuable timber resources, limiting their conversion to crop production.

Canada's Largest Industry Will Become Vulnerable

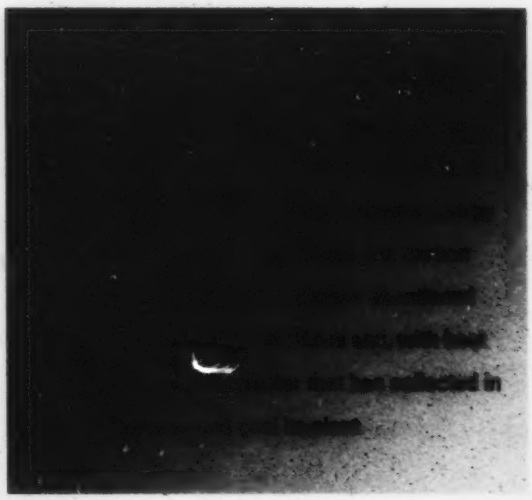
Canada's forests are one of the country's most valuable natural resources; the harvesting and processing of wood products employs almost 300,000 people from one end of the country to the other. The forests are also an important ecological resource for the world, as vital wildlife habitats, as a major repository of the global reserve of living carbon and as moderators and influencers of world climatic conditions.

It is expected that, as a result of global warming, the boundaries of different forest types will change dramatically, producing a major decline in the total area of Canada covered by trees. The expansion of the boreal forests into the northern tundra would be retarded by poor soil conditions and permafrost. Where trees are subjected to greater environmental stresses – including chemical leaching, increased ultraviolet radiation and new insect and pest infestations – forest deterioration could occur on a large scale. Further, generally drier conditions would inevitably result in a significant increase in forest fires.

A Fragile Northern Ecology Made Even More Fragile

Most of Canada's northern regions are covered by permafrost, a permanent layer of ice upon which a thin layer of ground cover 'floats' even during the summer months. This permafrost is a major factor in the drainage of water, the growth of vegetation and soil stability. Global warming will cause a gradual decay in the southern edges of this permafrost zone, dramatically affecting the northern ecosystem and disrupting transportation and economic systems in the North. For example, roads, buildings and pipelines constructed on the permafrost could become extremely unstable as the thawing ice is squeezed out from underneath them. As rainfall and snowfall patterns move north, increased water runoff, particularly during the spring thaw, will greatly increase periodic flooding as well as the inundation of huge tracts of land.

Furthermore, as the permafrost layer thaws, it could result in a large-scale release of methane gases currently trapped within it. This release would contribute even further to global warming.



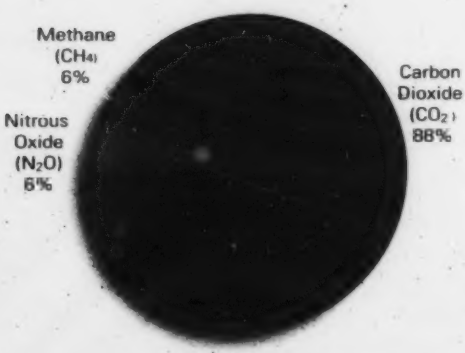
EFFECTING CHANGE: A NATIONAL STRATEGY

Over the past decade, the international scientific community has become increasingly aware that changes in the earth's atmosphere will lead to changes in the global climate systems. There is general agreement that increasing concentrations of greenhouse gases will cause global warming and that this could have serious consequences.

There is consensus in the international community that the risks associated with inaction on greenhouse gas emissions are too great to wait upon the results of further research and that actions need to be taken now to begin dealing with the problem. However, the problem cannot be solved by one country or group of countries. The solution to the global warming problem must be as global as the problem. Industrialized nations are the major emitters of greenhouse gases but future growth in these emissions is forecast to be greatest in developing countries.

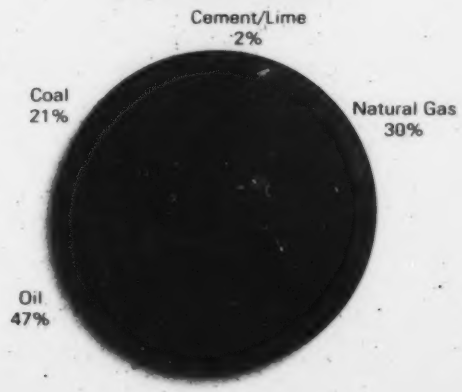
Canada is committed to stabilizing emissions of CO_2 and other greenhouse gases (not controlled under the Montreal Protocol) at the 1990 level by the year 2000. This is a national goal and does not directly pertain to specific regions or sectors. Most other industrialized countries have made similar commitments. Canada is also participating in international efforts to find a coordinated, equitable and effective set of actions involving developed and developing coun-

Major Greenhouse Gases (1990 Estimates)



Total Emissions 521.9 Mt
***CO_2 equivalent** emissions.*

Carbon Dioxide Emissions (1990 Estimates)



Total Emissions 458.2 Mt

tries through the United Nations Convention on Climate Change.

Canada's domestic response to global warming is both a challenge and an opportunity. Initial actions will be those that are most cost-effective, that are good for the economy and which provide opportunities for business.

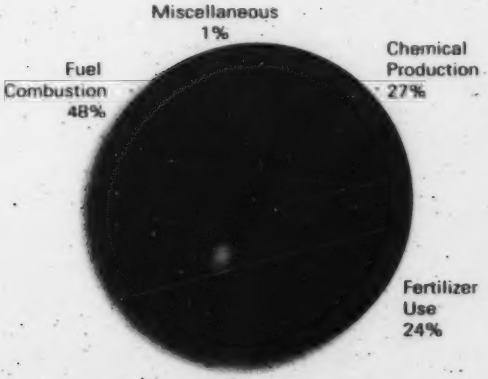
The Framework For Change

The framework developed to guide domestic action is called the National Action Strategy on Global Warming. This strategy guides federal, provincial and municipal governments, all sectors of the Canadian economy and all Canadians in identifying their own actions to work towards national goals.

Canada's National Action Strategy on Global Warming has three basic components, each of which is integrated with the others. They are: limiting and reducing the emission of greenhouse gases, anticipating and preparing for potential climatic changes which Canada may experience as a result of global warming, and improving scientific understanding and predictive capabilities with respect to climate change.

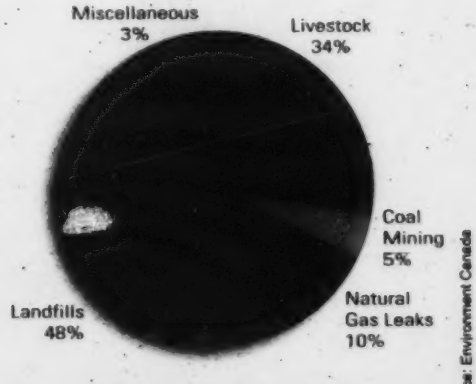
The global warming strategy is truly a national one, integrating the individual actions of Canadians and coordinating the activities of federal, provincial and territorial governments and all sectors of the Canadian economy. It is being managed through cooperative

Nitrous Oxide Emissions (1990 Estimates)



Total Emissions 31.3 Mt
CO_2 equivalent emissions

Methane Emissions (1990 Estimates)



Total Emissions 32.4 Mt
CO_2 equivalent emissions

Source: Environment Canada

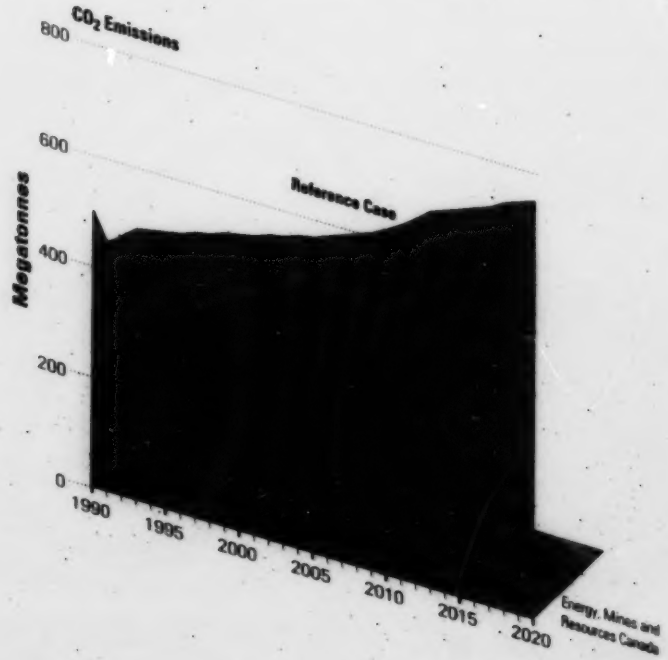
mechanisms and intergovernmental arrangements and agreements. A number of initiatives are already in place or planned. The extent to which these actions will contribute to the national goal is being assessed. Further actions will be developed through consultative processes.

Limiting Emissions

Because Canada's current level of greenhouse gas emissions is projected to increase through to the year 2000, the initial focus of the national strategy is the limitation and reduction of emissions. Canada's approach to emission limitation is based upon four key principles:

- Comprehensive: All greenhouse gases, sources and sinks are addressed in order of priority based upon their contribution to the problem.
- International: The strategy recognizes that this is a global problem requiring a concerted and coordinated international response. While undertaking its own domestic actions, Canada

Energy-Related CO_2 Outlook



will work in concert with other countries to develop joint strategies and implementation plans.

- Flexible: A phased, progressive response to the global warming challenge is necessary in order to accommodate a new scientific understanding related to the dimensions of the problem and the effectiveness of various limitation techniques.
- Regional: Because Canada is such a large and regionally diverse country, limitation strategies will vary from region to region, recognizing economic differences and ensuring national measures do not have an inequitable regional impact.

The first step in effecting change is to determine where we are and track progress towards achieving national goals. To this end, all governments are cooperating on the development of a national inventory and reporting system, including energy and emission forecasting, which will help to assess the effectiveness of measures undertaken across Canada.

Adaptation

The development of policies to prepare for climate change requires an understanding of current climates, how they are changing and the social and economic impacts of those changes. The potential for adaptation to climate change will be addressed systematically through:

- comprehensive monitoring;
- assessment of the corresponding socio-economic impacts;
- review and modification to government policies and programs; and
- information to the public about the nature of the impacts.

Improving Scientific Understanding

While the international scientific community generally agrees that global warming will occur, it is uncertain about the magnitude, timing and regional distribution of climate change. Through the National Action Strategy, scientific knowledge of and ability to predict climate change will be improved through integrated regional impact studies, climatic data collection and analysis, climate system modelling and Canada's participation in global climate system research projects.

PARTNERSHIPS AND INNOVATION: THE GOVERNMENT OF CANADA

In 1990, the Government of Canada released *Canada's Green Plan for a Healthy Environment*. Developed as a product of extensive consultations with Canadians, *Canada's Green Plan* is intended to focus national efforts to ensure an economically prosperous and environmentally sustainable future for Canadians. The federal government's program for addressing global warming at home and abroad is contained in *Canada's Green Plan*, and is based upon the framework for action presented in the National Action Strategy on Global Warming.

Limiting Emissions: First Steps

In order to track progress towards Canada's emission stabilization objectives, the federal government is working with the provinces and territories to develop a national inventory and reporting system. This will help measure the effectiveness of the national response. Work is also being done on energy and emission forecasting.

The consumption of fossil fuels represents the primary source of many greenhouse gases, particularly CO_2. Because there is little short-term prospect for substituting alternatives to fossil fuels, the primary approach to limitations is to improve energy efficiency. The federal *Energy Efficiency and Alternative Energy Act* guides measures in this direction. An Efficiency and Alternate Energy Program defines broad measures focusing on industrial energy use, home/office heating, transportation and consumer products. These measures have been designed to make economic sense in their own right. That is, they contribute to the competitiveness of Canada's economy while helping to achieve greenhouse gas limitation targets. They include energy efficiency standards and labelling for equipment and products, a building energy code, an energy-efficient housing standard (called R-2000), technology transfer and an information program.

While pursuing energy efficiency measures, the Government of Canada is also examining alternative and substitute energy sources which do not pose the same emission threat. Natural gas and biomass represent potential alternate transportation fuels as well as substitute sources of energy for Canada's energy intensive industries . Nuclear and hydro-electric power can continue to play important roles in limiting greenhouse gas emissions.

Canada's forests are an integral part of the plan. Trees are an important storehouse for carbon as well as acting to lower peak energy demands by

providing shade and windbreaks. The federal government is working in conjunction with other jurisdictions, individual Canadians and community organizations to plant over 300 million trees in rural and urban areas across Canada.

Though energy use is the single largest source of greenhouse gases in Canada, the agricultural industry also contributes to the problem. The federal government is working with the agricultural community to reduce summer fallowing, implement practices to increase the organic content of soils and develop technologies to reduce emissions from livestock, fertilizers and cultivation activities.

An informed population is essential to the success of any concerted national action. Actions by individual Canadians can contribute to the solution. Through the Canadian Environmental Citizenship Initiative, a learning program on global warming will help explain the issues to Canadians and the role they can play in reducing greenhouse gas emissions.

Limiting Emissions: Beyond First Steps

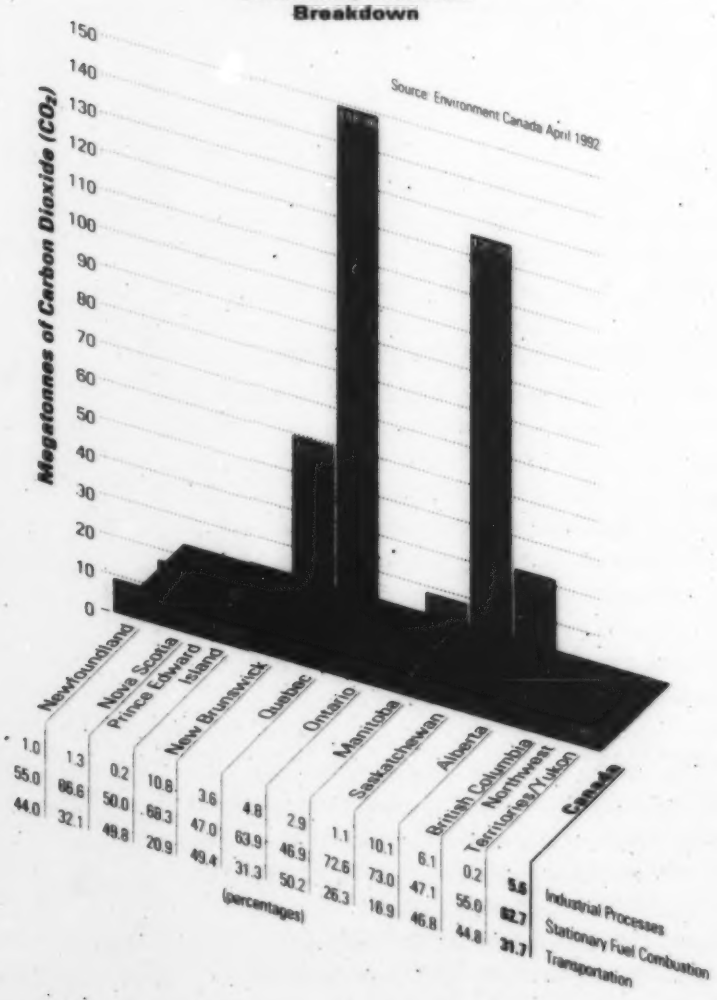
The federal government's initial measures and the first step measures of the provinces and territories may not realize Canada's stabilization goal. The Government of Canada and its partners will examine additional farther-reaching measures through a national consultation process. For its part, the federal government is examining the potential of economic instruments to achieve environmental objectives, including taxes and emissions-trading to attain reductions in greenhouse gas emissions.

Adaptation

Regardless of the success of limitation programs, some degree of climate change is likely in Canada. The development of policies to prepare for climate change requires an understanding of current climates, how they are changing and their social and economic implications. Identifying those areas of greatest risk is critical to adapting to potential changes. A series of climate impact assessments will determine how climatic change might affect the

regional economies across the country, beginning with those considered to be particularly sensitive – the Mackenzie Basin, the Prairies and the Great-Lakes-St. Lawrence Basin. The results of these studies will help Canada determine what mitigating action might be necessary and what adaptation strategies to pursue.

Estimated CO_2 Emissions for Canada – 1990
Provincial/Territorial Breakdown



Improving Our Understanding

While scientists around the world generally agree that global warming will occur, many information and knowledge gaps remain. These include the magnitude, timing and regional distribution of the impacts of climate change.

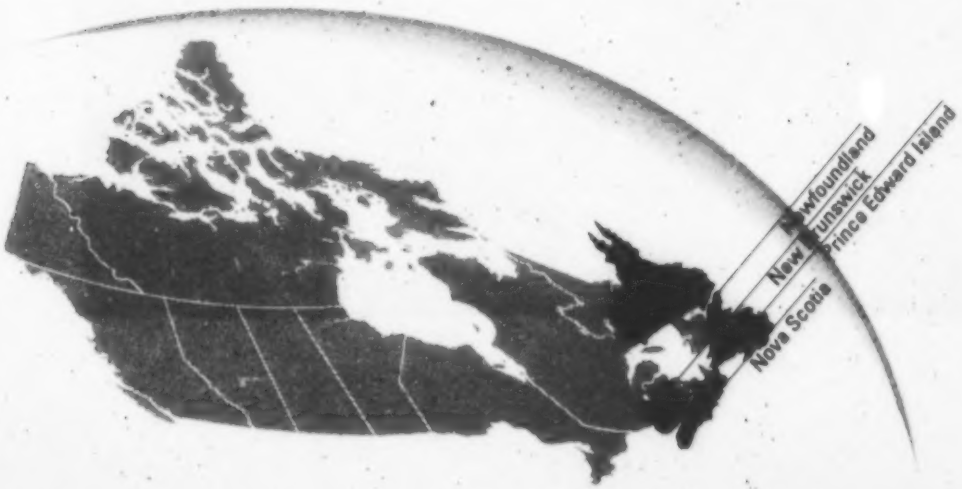
Reducing these uncertainties is the objective of Canada's Global Warming Science Program, which will focus the nation's acknowledged expertise in climate change research and modelling. As part of that program, Canada is developing a new and more sophisticated global circulation model to help formulate adaptive strategies and policy options. A Climate Research Network will link the activities of various research centres around the world to each other. And, to ensure that research activities can build upon each other, A Climate Integration and Prediction Centre, with high-speed communications and computer resources, will act as the hub of the network.

PARTNERSHIPS AND INNOVATION: ATLANTIC CANADA

NEWFOUNDLAND AND LABRADOR

The island of Newfoundland and the coastal areas of Labrador have a maritime climate. While not extremely severe, it is characterized by long heating seasons and strong winds. In contrast, central Labrador has generally colder winters and warmer summers. The population's wide dispersal throughout the province gives rise to a significant transportation need while its distance from national distribution centres and relatively low overall demand make energy prices higher than in most other parts of Canada.

As a result, the provincial government has been an active proponent of energy efficiency and alternative energy for many years. The potential of this area to provide both economic development and environmental benefits simultaneously has given rise to renewed action. To this end, a Strategic Plan for Energy Efficiency and Alternative Energy has been developed and adopted in consultation with both energy producers and consumers. The Plan was adopted by the provincial government in the spring of 1990. The major goal of the Plan is to increase the province's overall energy efficiency by 20 per cent by the year 2000. Further, by the end of the planning period, the use of indigenous alternative energy sources is projected to increase by half, to 12 per cent of total energy supply. Achievement of these objectives would be a significant step towards stabilizing energy-related greenhouse gas emissions in the province.



The Plan recommends actions by governments, utilities, independent power producers and industry. For example, the Plan recommends that the province's electric utility, Newfoundland and Labrador Hydro, should set purchase rates to encourage the development of independent small-scale hydro-electric power projects. Hydro plans to develop 50 MW of such generating capacity by the middle of the decade through proposals from the private sector and local communities.

Over the longer term, new generating facilities from the Lower Churchill River will supply power from Labrador to Newfoundland. The construction of an electrical transmission system from that facility would displace oil-fired thermal generation and contribute significantly to achieving greenhouse gas emission reduction targets. The sale of excess capacity from the Lower Churchill River project would also help other jurisdictions within North America reduce emissions from their own thermal generation sources.

PRINCE EDWARD ISLAND

Prince Edward Island (P.E.I.) is Canada's smallest province. Industrial activity per capita is less than any other province in Canada and the industries on which its economy is based are less energy intensive (about 10 per cent of the Canadian average). Oil and oil-based products account for 89 per cent of the energy consumed though P.E.I. has no producing oil, gas or coal resources. The only available fuels are biomass-related – cordwood, wood chips, wood waste, straw and garbage.

The negative economic impact of this reliance on imported energy and electricity has stimulated provincial efforts to increase energy efficiency and develop locally available alternative energy sources. For example:

- Large biomass-powered district heating systems have been developed in downtown Charlottetown and at the University of P.E.I.; a proposed combination biomass/light oil electricity/heat energy co-generation plant could reduce reliance on fossil fuels even further, if constructed.
- Smaller-scale, biomass district heating systems are being developed for use in other towns and villages around the province.

- More than 30,000 tonnes of garbage annually are being consumed to produce energy at the Parkdale energy-from-waste plant, creating the energy equivalent of 2.3 million litres of oil as well as reducing the volume of garbage in landfill sites and the future volume of landfill-generated methane gases.
- Wind-powered energy systems are being examined and tested at the Atlantic Wind Test Site at North Cape, P.E.I.

Through these and other projects, the share of P.E.I.'s overall energy requirements derived from biomass has increased to 11 per cent (in 1989). P.E.I.'s efforts to develop competitively-priced alternatives to imported fossil fuels have also contributed to economic productivity and competitiveness. The development of the biomass energy industry on Prince Edward Island has stimulated local employment and enterprise in the forestry, transportation, fabrication and engineering sectors.

Increased energy security and energy-use efficiency are important economic and environmental objectives. While contributing to the local economy, these efforts have also reduced net emissions of greenhouse gases, thereby helping to address the problems associated with global warming.

NOVA SCOTIA

The Nova Scotia Action Strategy on Global Warming embraces a comprehensive approach incorporating all greenhouse gases into a single greenhouse gas "budget." The provincial government considers this a critical part of the strategy as any gas that contributes to the problem must also contribute to the solution. Unless their individual contributions are considered on a comprehensive basis, assessing the impact of diverse emission reduction options would be impossible.

The goal of the provincial strategy is to work towards the stabilization of man-made greenhouse gas emissions at 1990 levels by the year 2000. The strategy's five major components are:

- comprehensive stakeholder consultations through workshops, seminars and the establishment of small groups to examine common concerns;
- a multi-phase approach involving actions that make sense in their own right, have immediate

impact and are based upon existing technology and resources. These actions must have the potential to reduce more than one atmospheric pollutant and must be examined in relation to economic costs, environmental benefits and social implications, the results of which can be measured;

- research and development activities to reduce greenhouse gas emissions at source, reduce the growth of energy consumption and identify opportunities to increase the absorption of carbon dioxide;
- a management system that evaluates annual changes in greenhouse gas emissions through a balance sheet accounting method in order to report to the public on annual results; and
- intergovernmental cooperation in order to integrate Nova Scotia's efforts into the greater national and international context.

While the issue of global warming has claimed public attention for only a few years, individuals, communities and industry throughout the province are already contributing a wide variety of solutions. Some of these activities address specifically global warming while many others focus on reducing energy costs and improving resource management practices. Whatever the motivation, however, all of these actions make a direct or indirect contribution to the achievement of provincial emission reduction efforts. Examples of these measures include:

- energy code for new building construction;
- energy efficiency standards for new appliances;
- promotion of fuel-efficient driving techniques in the commercial trucking industry;
- a comprehensive forest management approach as part of a sustainable forestry program (including consideration of carbon sequestering);
- recycling and recovery programs such as recycled asphalt, concrete and methane recovery from coal mines and land fills;
- land management practices to limit greenhouse gas emissions in the agricultural sector; and
- the promotion of tree planting and vegetation belts in urban development around the province.

NEW BRUNSWICK

Energy efficiency and conservation are the cornerstones of the province's Energy Policy 1991-2005 which is designed to reduce greenhouse gas emissions while ensuring that adequate energy resources are available to meet future energy needs. The objectives of the policy include moving towards a

sustainable development future; pursuing energy efficiency and conservation in all sectors of the economy; and developing and maintaining reasonably priced and secure energy sources to meet the needs of New Brunswickers. Regulation, demand-side management, research and development, alternative energy use and information and education form the bases of activities.

- An Energy Efficiency Act to regulate minimum energy performance standards and labelling in major household appliances and energy-consuming equipment;
- An annual energy audit of all government buildings;
- A review of new building design from a energy 'life cycle' costing viewpoint;
- Financial incentives for the certification of new homes built to an energy efficient (R2000) standard as well as research into an advanced housing design that uses half the energy of an R2000 home;
- Street and area lighting conversion from mercury vapour to high-pressure sodium;
- Research on the utilization of heat pumps and demonstration projects on ground water heat pump technology; and
- A major study of the provincial energy efficiency potential for all sectors and all energy forms to identify priority programs and targets.

New Brunswick promotes energy efficiency and conservation awareness in the classroom and to high energy-use segments of the economy, and provides an energy advisory service through government agencies and public utilities. Part of this public awareness campaign includes the development of a *Global Warming Primer* for distribution throughout the school system.

Since the province's primary energy supply is dominated by crude oil products, the government is pursuing the use of biomass and natural gas as alternate energy sources. Biomass now constitutes 25 per cent of the primary energy supply; new initiatives will increase this further through wood-fired power generation and co-generation. The forestry sector is the key primary industry in the province; silvicultural programs are in effect to ensure a sustainable harvest. In fact, New Brunswick has been credited with having the best forestry management practices in Canada.

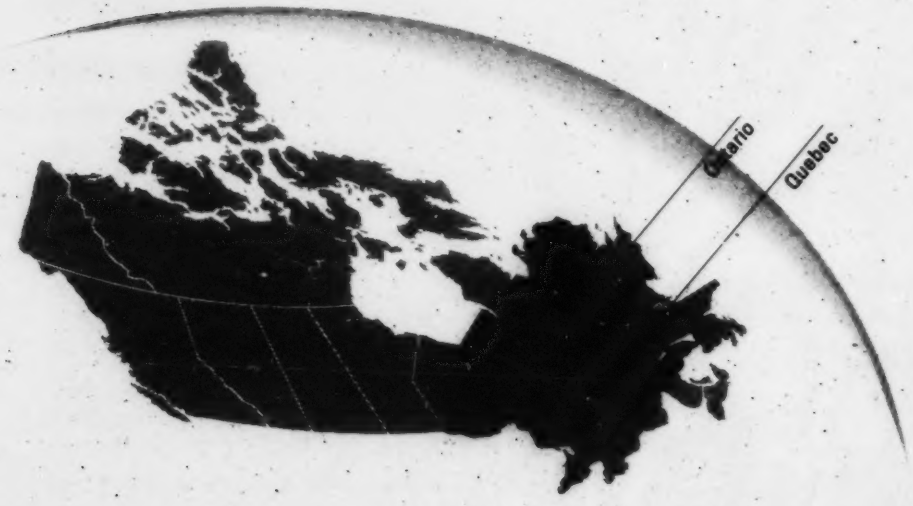
PARTNERSHIPS AND INNOVATION: CENTRAL CANADA

QUEBEC

Because of its substantial use of hydro-electric power, Quebec's per capita carbon dioxide emissions are the lowest in Canada. Contributing to that record is the reduction in oil consumption as the demand for natural gas continues to rise throughout the province. However, as the second most populated province of Canada, Quebec is responsible for some 14 per cent of total national carbon dioxide production. The industrial and transportation sectors are the most significant sources of greenhouse gases, accounting for some 70 per cent of provincial emissions.

To achieve provincial sustainable development goals and pursue economic development objectives, the Quebec government has undertaken an Energy Efficiency Strategy. The plan focuses on programs to enhance energy efficiency throughout the business and industrial sectors as well as promoting the use of energy efficient products for the home. In particular, Hydro Quebec will invest up to $1.9 billion over the next 10 years to promote energy efficiency through information and financial support programs. The Plan complements programs of the provinces major utilities, Hydro-Quebec and Gaz Metropolitan. Elements include:

- increasing the awareness of the general public and providing the information required for improved energy efficiency;



- funding research activities related to energy efficiency, electric technologies, gas technologies and renewable resources;
- providing special funding for energy efficient projects through innovative measures undertaken in cooperation with financial institutions;
- developing standards and regulations for space heating, equipment and machinery using electricity and fossil fuels; and
- experimenting with electricity billing rates to encourage more rational energy use in the residential and commercial sectors. This might include electricity consumption monitoring and energy rating linking the value and mortgage rate of a dwelling to is energy efficiency performance.

Because the industrial and transportation sectors account for the largest proportion of energy consumed in the province, the Quebec government will promote the implementation of new technologies and ensure that large and small enterprises alike have the information they require to improve their energy performance. In addition, the government will be developing programs to encourage the use of mass transit, the rail transportation of goods and greater energy efficiency for all vehicles. Over the long term, the government will also promote better land use planning to reverse urban sprawl, thus reducing the public's daily use of private transportation.

Quebec's Energy Efficiency Strategy will improve the quality of life for Quebecers while reducing the projected growth of emissions. By 2001, it is projected that the plan will achieve a seven per cent saving in energy consumption and a six per cent reduction in CO_2 emissions. Overall, Quebec will have improved its energy efficiency by 14 per cent. Quebec will continue to promote the use of hydro-electric power in the belief that it is one of the most environmentally friendly energy sources. This collective effort will contribute to the restoration of global ecosystems.

ONTARIO

Ontario is the largest province in Canada and its economy is the most heavily industrialized, with a large resource extraction and secondary manufacturing sector. Consequently, Ontario is the largest user of fossil fuels in the country and the largest source of carbon dioxide emissions.

Ontario has undertaken extensive consultations with business and public interest groups. The near-term actions developed from that process include wide public education and involvement in the process; a detailed inventory of all greenhouse gas emissions, a detailed analysis of the links between emissions and overall economic performance; energy efficiency, conservation and substitution efforts; waste reduction; control of chlorofluorocarbons and their substitutes; and, research on comparative costs and impacts.

A more far-reaching strategy will go beyond the role of government to include the responsibilities and actions required of businesses, institutions and the general public.

It will be based on the development of cost-effective means to reduce emissions while maintaining population growth and achieving robust economic performance. For example, programs will be developed to help Ontario residents use energy more efficiently, reduce smog and emissions of acid gases while providing economic returns at the same time.

Public information, financial incentives and regulatory measures are being implemented to meet these objectives and stimulate changes in marketplace behaviours. For example:

- The Tax for Fuel Conservation is based upon the energy efficiency ratings of new cars. It has been extended to include a rebate for the purchase of the most energy-efficient cars sold. This combined rebate/pricing signal was the first of its kind in the world and has served as a model for similar programs in the United States;
- The provincial electric utility, Ontario Hydro, has undertaken a long-term demand management program, the most ambitious and comprehensive of any utility in North America. It will spend an estimated $6 billion by the year 2000 to reduce projected peak demand by 5000 MW, or 13 per cent of projected peak load; and
- Under the *Energy Efficiency Act*, minimum energy performance standards have been adopted for a wide range of consumer and commercial products, from refrigerators and fossil fuel furnaces to lighting and electric motors.

Ontario continues to review related policies to reduce contributions to global warming and provide for flexible responses to any changes in climate. These include investments in public transit, agricultural practices, the collection and use of landfill methane, traffic management, land use planning and development, and forest regeneration and afforestation.

Further consultations with the public will focus on actions to achieve future emission reductions while revitalizing economic performance. Roles will be identified for all sectors of Ontario's society. In the meantime, market-driven opportunities for improving industrial productivity are also contributing to reduced emissions of carbon dioxide; these include continuous casting in the making of steel and the shift to dry kilns in the cement industry.

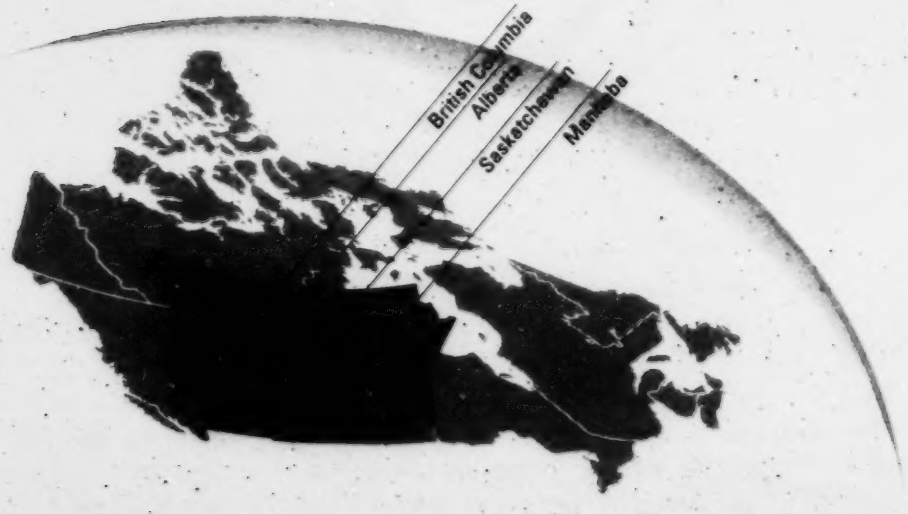
Tracking progress in Ontario to deal with global warming will link changes in emission levels with economic performance on an annual basis. A cornerstone of monitoring and evaluation is the recognition that overall emissions are an inadequate indicator of progress, as losses in employment also reduce emissions but are unacceptable.

PARTNERSHIPS AND INNOVATION: WESTERN CANADA

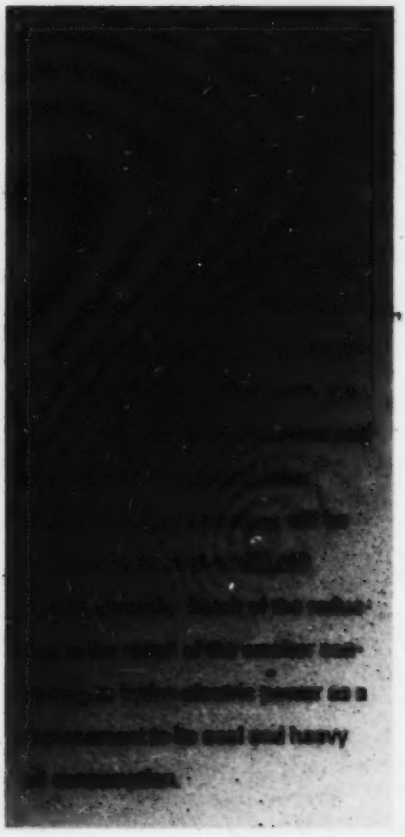
MANITOBA

Manitoba views its commitment to sustainable development as the means through which economic growth can be enhanced, societal objectives achieved and environmental protection affirmed. Sustainable development strategies in a number of areas are being pursued to bring this commitment into all of the province's homes and workplaces. These strategies which will respond directly to global warming and climate change issues include:

- Energy Strategy: meeting the current and future energy needs of Manitobans through policies that minimize environmental damage, including limiting emissions of greenhouse gases;
- Forestry Strategy: as part of an overall land and water strategy, a plan to revise and implement forestry management policies in the context of sustainable development. The strategy will also focus on the capacity of forests as sinks for greenhouse gases, planning for the potential impact of climate change, development and management of woodlots and shelterbelts, and expansion of the urban forest;
- Environmental management and Protection Strategy: anticipating and preventing environmental damage, including the development of a comprehensive air quality management plan which will integrate and coordinate with global warming initiatives; and



- Education Strategy: establishing the principles of sustainable development in the education material used in Manitoba schools in order to promote understanding and assist in developing an overall approach to sustainable development and global warming.



Developing understanding of the problem is also being pursued through a baseline inventory of greenhouse gas sources and sinks specific to the province. Conforming to international inventory practices, the project focuses on major greenhouse gases associated with a wide range of industrial and human activities. In addition, all developments subject to an environmental impact assessment under Manitoba legislation are required to identify and quantify greenhouse gas emissions related to those projects.

To pursue energy efficiency objectives, Manitoba Hydro has undertaken a 10-year, $400 million Power Smart program. The purpose of the plan is to reduce, by the year 2001, annual peak demand by 285 MW and annual energy consumption by 1049 gigawatt hours. Though hydro generation accounts for most of Manitoba's electricity production, conservation efforts of this magnitude will help displace future demands or provide exports to other jurisdictions.

Under the Power Smart program, activities include subsidies for automatic timers for vehicle block heaters and warmers; energy efficient lighting for roadways and agricultural operations; promotion of more energy efficient home water heaters and electrical appliances; and comprehensive retrofit activities for existing commercial buildings.

SASKATCHEWAN

Saskatchewan is involved in a variety of initiatives at the local, provincial and regional level to address issues directly and indirectly relating to global warming.

Through a public consultation process, stratospheric ozone depletion and global warming were identified as the most important air quality issues facing the province; blowing dust and agricultural burning were seen as important local problems. The consultation process also concluded that a

comprehensive clean air strategy was essential to integrate all aspects of atmospheric emission reduction, including means to reduce greenhouse gas emissions. Saskatchewan's approach to air quality will be guided by provincial concerns, national commitments and the objectives of the international community.

Energy conservation measures make an important contribution to the reduction of greenhouse gas emissions. Some of the measures undertaken within the province include:

- SaskPower's Environmental Responsibility Policy: Under this policy, the provincial electric utility will build and operate facilities in a manner designed to conserve natural resources, maintain natural systems and preserve natural diversity; the PowerWise program promotes energy conservation; renewable energy and co-generation are being considered as alternate sources of supply; and coal-fired generation plants are being improved to increase efficiency and reduce emissions;
- Energy Conservation Information: A toll-free information telephone service provides direct advice on energy and conservation issues to the general public and the provincial school system; independent consultants provide technical information and the provincial government produces videos and workbooks for the classroom;
- Saskatchewan Energy Conservation and Development Institute: The Institute will review power demand forecasts, examine power generation options and play a key role in the research and promotion of cost-effective conservation measures; it will also promote the commercial application of conservation technologies and help form partnerships in energy development projects; and
- *Ozone Substances Control Act:* This legislation regulates the collection, recycling, storage and disposal of ozone-depleting substances and establishes target dates for their phase out and prohibition.

At the regional level, Saskatchewan is participating with the western provinces and the two territorial governments on resolving issues relating to overall air quality. A survey of greenhouse gas-related activities and initiatives in the region has already identified information inconsistencies and gaps within the region. Priority activities include standard data collection and monitoring methods and developing a more comprehensive inventory.

ALBERTA

Albertans have a strong interest in protecting their environment, now and for future generations. As the largest producer of hydrocarbon energy resources in Canada, the energy industry plays an important role in the economy of the province. For these reasons, the province has been a leader in setting air and water quality and land-use objectives; its energy-related air emission concerns are in three main areas: acid rain, smog and global warming.

Alberta's Clean Air Strategy emerged from a broad-based public consultation process involving governments, industry, environmental groups, the native community, public health organizations, students and individuals. The process was designed to clarify the most important issues, outline practical and achievable actions to reduce emissions and develop policy and program recommendations to present to the provincial government. The strategic framework for the Clean Air Strategy that emerged from the process provided a vision for clean air in the province:

> The air will be odourless, tasteless, look clear and have no measurable short- or long-term adverse effect on people, animals and the environment.

Alberta's Clean Air Strategy provides guidelines to government for the management of emissions from human activities and encourages appropriate lifestyles to protect human health and ecological integrity – all within the national and international context. Comprehensiveness and flexibility are hallmarks of the strategy which encompasses public education, market-based approaches, legislation and regulation, and research measures to achieve the vision.

The province is also undertaking an expansion of efforts to encourage energy efficiency measures which are economic in their own right; that is, they reduce energy-related emissions and maintain or improve the competitiveness of Alberta's industry. The identification of barriers to emission reductions is also taking place through a review of regulations and other government activities. In addition, the government is working closely with industry to study effective carbon dioxide capture and disposal technologies.

Other activities being considered by the government to more effectively manage emission reductions and pursue conservation measures include a building energy performance code, a review of the electric utility regulatory process, energy efficiency legislation and a government-wide energy management program. Vehicle fuel efficiency standards, alternate sources of energy for electric generation and new approaches to managing source emissions such as the development of economic instruments are also being examined.

BRITISH COLUMBIA

The B.C. government is committed to sustaining clean air, water and land which are vital to ensuring the health of the ecosystem and the quality of life in the province. Clean air is threatened locally, regionally and globally by a variety of pollutants. The causes of these pollutants are linked, and their solutions must be linked as well.

B.C.'s Clean Air Strategy establishes an overall vision for atmospheric quality in the province. Ongoing policies and recommendations for action, including implementation plans, are being developed in consultation with all stakeholders to ensure that this vision is realized. The B.C. government supports the national goal of stabilizing greenhouse gas emissions and is considering the implications of more challenging targets.

To support these goals, a four-part Greenhouse Gas Project has been completed, including inventory and management measures for nitrogen oxides, volatile organic compounds and ground-level ozone; for chlorofluorocarbons and related gases; for methane; and for carbon dioxide. These reports were the substance of workshops focusing on the social, economic and institutional implications of reducing greenhouse gas emissions in British Columbia.

The province's unique geography and the distribution of greenhouse gas emission sources represent unique challenges and opportunities in pursuing emission reduction objectives. Historically, B.C.'s air quality concerns have been centred around industrial sources (pulp mills, refineries, smelters, mines and saw mills). The province's high mountains and deep valleys are conducive to trapping the pollution from these point sources.

Part of the overall management plan, therefore, is developing means to ensure that reductions in one greenhouse gas emission do not result in the increase of other greenhouse gases. In addition, the management plan must integrate the other elements of the Clean Air Strategy as well as other national and international efforts.

The province has an abundance of hydro-electric generation; power from this source meets the majority of B.C.'s industrial, commercial and residential electricity requirements. B.C.'s electrical utilities are vigorously pursuing energy efficiency in a number of areas including Power Smart, Power Sense (encouraging consumers to use energy efficient appliances and equipment) and Resource Smart.

The province also has an *Energy Efficiency Act* that sets minimum efficiency performance standards for a range of energy-using equipment, from refrigerators to industrial motors. The province is involved in developing efficiency standards for buildings and demonstrating and evaluating energy efficient technologies, such as hydrogen fuel cells, in government buildings and vehicles.

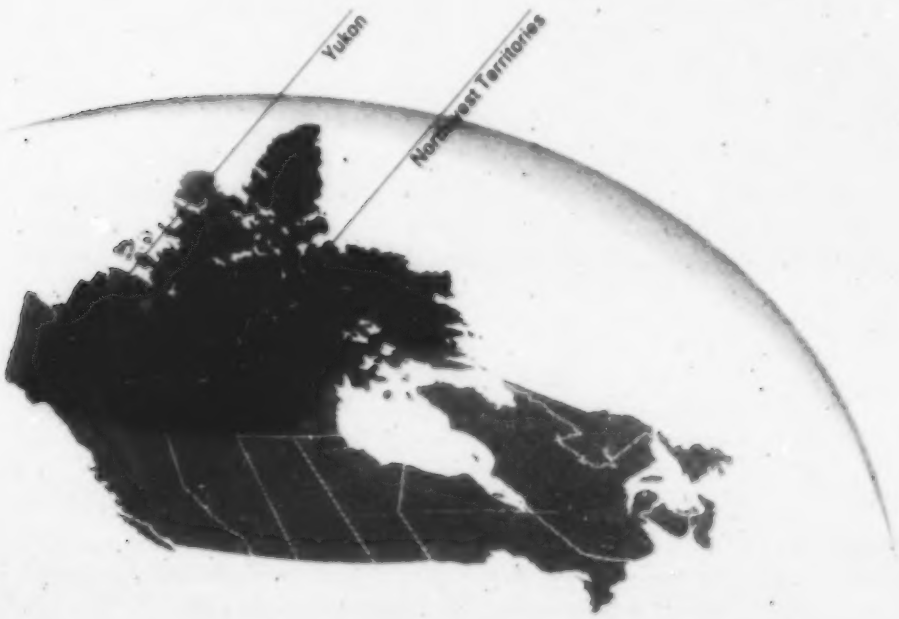
PARTNERSHIPS AND INNOVATION: CANADA'S NORTH

THE NORTHWEST TERRITORIES

Although the Northwest Territories (N.W.T.) cover one-third of Canada's land mass, it contains a population of less than 60,000 people. About half the population lives in well-developed modern communities while the balance lives in small, remote communities scattered throughout the vast region. Human and natural systems in the N.W.T. are adapted to the extreme cold; the polar climate imposes severe limits on activities.

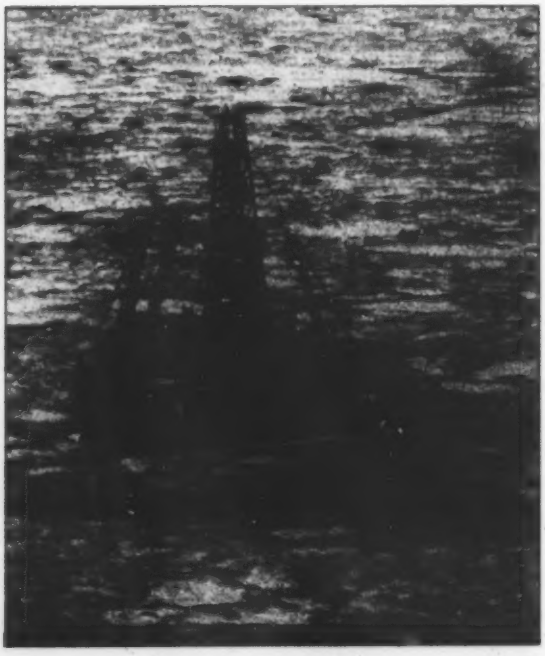
All ecosystems in the N.W.T. continue to function in an essentially undisturbed natural condition. However, that condition is now being threatened by global environmental problems including climate change, the depletion of the ozone layer and the long-range transport of pollutants. Current scientific understanding of the impacts of global warming suggest that they will be significant and disruptive to polar regions.

Because agricultural activities are extremely limited and economic development is only slowly taking place, carbon dioxide is the only greenhouse gas that is emitted in significant quantities as a result of human activities in the N.W.T. Energy consumption, one-third higher than the per capita



national average, is the major producer of carbon dioxide emissions. The major factors associated with this consumption include a widely dispersed population that is growing twice as fast as the national average, cold temperatures and extended periods of darkness, and government subsidization of very high fuel costs which could be encouraging higher levels of consumption.

Over 90 per cent of the N.W.T.'s energy requirements are met by burning refined petroleum products such as diesel fuel, gasoline and aviation gas. Alternative energy sources remain largely undeveloped though a limited amount of natural gas is available and more may become available if gas field developments occur in the western part of the N.W.T. Hydro-electric power is already available to some of the large, clustered communities and further investigation is being carried out on potential new sites. In addition, one coastal community and some remote research camps are using wind power to generate electricity. The feasibility of wind generation on a broad scale is currently being explored.



Considerable untested potential does exist but alternative energy supplies will not be a realistic option for the short term. Therefore, the reduction of carbon dioxide emissions can best be achieved through energy conservation and efficiency measures, which are being undertaken in a variety of areas:

- Operational and maintenance personnel in territorial and municipal buildings are trained in energy conservation practices and technologies, and energy audits are available to residential and commercial buildings.
- Energy awareness programs in elementary and secondary schools focus public attention on the need for wise energy use.
- Plans to improve the overall movement of people and goods will reduce the consumption of fuel by vehicles and aircraft.

- The government is reviewing the electricity price subsidization process, and other measures are being taken to reduce the distortion in electricity prices to ensure consumers receive the appropriate encouragement to reduce consumption.
- Electric utilities throughout the N.W.T. are working with their customers to increase awareness of conservation opportunities, investigate options for more hydro generation and utilize waste heat from diesel generators.
- The N.W.T. government is participating in a multi-disciplinary 'Mackenzie Basin Impact Study' to determine the likely effects of global warming on the physical environment and human activity within that region of the N.W.T.
- The N.W.T. government is working closely with all other governments in Canada to develop and refine Canada's national response to global warming and coordinate response measures at the local level.

YUKON

While Yukon's overall contribution to global warming is minuscule when compared to all of Canada, per capita emissions in Yukon are slightly higher than the national average. The combination of a cold climate and a large, sparsely populated area is the primary reason for this. Transportation accounts for a half of fossil fuel use in the territory, and space heating and the diesel generation of electricity are the other primary users. Emissions from all sources are almost exclusively in the form of carbon dioxide.

Though its contribution to the problem is small, the Yukon government and its people are committed to doing their part to combat global warming. An Energy Strategy, developed through an extensive public consultation process, provides guiding principles, policies and a blueprint for action . The strategy brings together elements of the Yukon Conservation Strategy and the Yukon Economic Strategy and will eventually bring together environmental, forestry and resource policies as well.

Currently, Yukon has a number of programs in place which contribute to global warming solutions by reducing fossil fuel use. These include low-interest loans for alternative energy projects, interest-free loans for building energy retrofits, electricity demand management programs, and a Power Smart Ideas Shop to provide information and advice to the Yukon public. The government itself has an internal energy program to increase its own energy efficiency and is developing building energy guidelines.

Yukon's major challenge is the heavy reliance on diesel fuel for transportation, space heating and electricity generation in many remote communities. While 90 per cent of Yukon's electrical needs are currently satisfied by hydro power, diesel generation is on the increase. For both transportation and remote electric generation, increased energy efficiency and substitution are the most promising options to help reduce carbon dioxide emissions.

LOOKING AHEAD

Progress Is Occurring

Canada's initial response to the challenge of global warming has taken shape, with a significant range of measures underway and planned across the entire country. Most of these measures are designed to reduce emissions, increase energy efficiency and conservation, and switch to less carbon-intensive fuel sources. Public consultations and information programs are an integral part of the process. Governments are developing standards and regulations, providing direct financing and designing tax and economic policy instruments to contribute to further progress.

Most measures currently underway pursue emissions reduction targets in a broader policy context, particularly in a more general approach to energy and environmental strategies. Regional impact, economic competitiveness and public participation are also integral to the process.

The Medium and Longer Term

Canada's National Action Strategy on Global Warming identifies domestic actions in the global context; the issue is an international problem requiring international solutions. While undertaking phased, progressive action at home, Canada is remaining sensitive to the international situation. Canada will ensure that it remains in step with its major trading partners abroad as well as assisting developing countries in undertaking their own emission reduction programs.

With the goal of stabilizing greenhouse gas emissions at 1990 levels by the year 2000, Canadian governments are now assessing how their initial measures will achieve that objective. Further measures are also being examined. The costs, benefits and social implications of these broader measures will be the subject of consultation between all levels of government and the general public.

Canada will continue to seek greater scientific certainty with respect to the nature and magnitude of climatic changes at home and abroad. While helping Canadians to understand the potential consequences of such changes, Canada will also work with the international scientific community to develop the knowledge required to solve this global problem.

CANADA

Environment Canada
Climate Change Response
Strategies Branch
La Salle Academy
373 Sussex Drive
Block E, Third Floor
Ottawa, Ontario
KIA OH3

Phone: 613 - 943-1531
Fax: 613 - 996-3960

Energy, Mines and Resources
Climate Change Task Force
580 Booth Street
Ottawa, Ontario
KIA OE4

Phone: 613 - 996-8534
Fax: 613 - 995-5576

NEWFOUNDLAND

Department of Mines and Energy
Atlantic Place, 6th Floor
215 Water Street
St. John's, Newfoundland
AlB 4J6

Phone: 709 - 729-2339
Fax: 709 - 729-2508

Department of Environment
and Lands
Confederation Building,
West Block
P.O. Box 8700
St. John's, Newfoundland
AlB 4J6

Phone: 709 - 729-2555
Fax: 709 - 729-1930

PRINCE EDWARD ISLAND

Department of Energy and
Forestry
11 Kent Street
P.O. Box 2000
Charlottetown,
Prince Edward Island
ClA 7N8

Phone: 902 - 368-5025
Fax: 902 - 368-5544

Department of the Environment
11 Kent Street
P.O. Box 2000
Charlottetown,
Prince Edward Island
ClA 7N8

Phone: 902 - 368-5031
Fax: 902 - 368-5830

NOVA SCOTIA

Department of Environment
7th Floor, Terminal Bldg
P.O. Box 2107
Halifax, Nova Scotia
B3J 3B7

Phone: 902 - 424-5695
Fax: 902 - 424-0501

Department of Natural Resources
1701 Hollis Street
P.O. Box 698
Halifax, Nova Scotia
B3J 2T9

Phone: 902 - 424-5364
Fax: 902 - 424-7735

NEW BRUNSWICK

Department of the Environment
364 Argyle Street, 3rd Floor
P.O. Box 6000
Fredericton, New Brunswick
E3B 5Hl

Phone: 506 - 457-4848
Fax: 506 - 453-2265

Department of Natural Resources
and Energy
Energy Division
Hugh John Fleming
Forestry Centre, 3rd Floor
P.O. Box 6000
Fredericton, New Brunswick
E3B 5H1

Phone: 506 - 453-3949
Fax: 506 - 457-4999

CONTACTS

QUÉBEC

Ministère de l'Énergie et des ressources
Secteur de l'Énergie
5700 - 4e Avenue ouest
4e étage Bureau A405
Charlesbourg, Québec
G1H 6R1

Phone: 418 - 643-4561
Fax: 418 - 643-8337

Département de l'Environnement
6e étage, 3900 rue Marly
Sainte-Foy, Québec
G1X 4E4

Phone: 418 - 643-7860
Fax: 418 - 643-7812

ONTARIO

Ministry of Energy
56 Wellesley St. West, 14th Floor
Toronto, Ontario
M7A 2B7

Phone: 416 - 327-1460
Fax: 416 - 327-1249

Ministry of Environment
Air Resources Branch
135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

Phone: 416 - 323-5050
Fax: 416 - 323-5006

MANITOBA

Manitoba Environment
Building No. 2
139 Tuxedo Avenue
Winnipeg, Manitoba
R3N 0H6

Phone: 204 - 945-7046
Fax: 204 - 945-5229

Manitoba Energy & Mines
Energy Division
555 - 330 Graham Avenue
Winnipeg, Manitoba
R3C 4E3

Phone: 204 - 945-1111
Fax: 204 - 945-1406

SASKATCHEWAN

Department of Energy & Mines
1914 Hamilton Street
Regina, Saskatchewan
S4P 4V4

Phone: 306 - 787-2523
Fax: 306 - 787-2333

Environment and Public Safety
3085 Albert Street
Regina, Saskatchewan
S4S 0B1

Phone: 306 - 787-6195
Fax: 306 - 787-0197

ALBERTA

Alberta Environment
Third Floor
Uxbridge Place
9820 - 106th Street
Edmonton, Alberta
T5K 2J6

Phone: 403 - 427-0047
Fax: 403 - 422-5136

Alberta Energy
7th Floor
North Tower Petroleum Plaza
9945 - 108th Street
Edmonton, Alberta
T5K 2G6

Phone: 403 - 427-5200
Fax: 403 - 427-2278

BRITISH COLUMBIA

Ministry of Energy Mines and Petroleum Resources
Energy Resources Division
617 Government Street, Room 433
Victoria, British Columbia
V8V 1X4

Phone: 604 - 356-2154
Fax: 604 - 387-1339

Ministry of the Environment
777 Broughton Street
Victoria, British Columbia
V8V lX5

Phone: 604 - 387-9933
Fax: 604 - 356-7197

YUKON

Department of Economic Development
Energy & Mines
211 Main Street, Suite 305
P.O. Box 2703
Whitehorse, Yukon
YlA 2C6

Phone: 403 - 667-5462
Fax: 403 - 668-6205

Department of Renewable Resources
10 Burns Road
P.O. Box 2703
Whitehorse, Yukon
YlA 2C6

Phone: 403 - 667-5634
Fax: 403 - 667-2438

Northwest Territories

Department of Energy Mines and Petroleum Resources
Box 1320
Yellowknife, NWT
XlA 2L9
Mail: 3rd Floor, Panda Two Mall

Phone: 403 - 920-3216
Fax: 403 - 873-0254

Department of Renewable Resources
Box 1320
Yellowknife, NWT
X1A 2L9

Phone: 403-873-7654
Fax: 403-873-0221